RESEARCH HIGHLIGHTS

Technical Series 01-102

"PLEX" HOUSING: A RENEWED TRADITION

Introduction

Maisonnettes, duplexes and triplexes in the city of Montréal have enjoyed much success since they were first built some 60 to 100 years ago. To this day, they have much to do with defining the character and quality of life of the older areas of this city. These housing forms, built in several North American cities between the First and Second World Wars, are still being built in Montréal, and they currently account for half of the city's dwelling units.

Despite continuing appeal, plex housing poses some drawbacks in today's context. Current standards and various innovations in new housing construction serve to underscore some of the limitations. For example, rooms in traditional plex housing can be small, kitchens may be dysfunctional, storage space is often non-existent, openings are tiny, basements are seldom or never used and outside spaces are narrow and lack intimacy.

An increased sensitivity to environmental, historical and sustainability issues, as well as economic concerns, affect design and construction choices today. There is an increasing interest in landscaping, gardening and outdoor terraces. Home offices and modified living spaces that match one's lifestyle are in demand.

To better understand the role of plex housing within today's context, and its ability to accommodate contemporary interests, lifestyles and design and construction practices, Canada Mortgage and Housing Corporation funded research to look at the potential for revitalizing plex housing.

Archetypes

Maisonnettes

St-André Street

Duplexes

Marie-Anne Street

Triplexes

Parc Lafontaine Ave.

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Research Methodology

The researchers first looked at various historical factors that have shaped Montréal's plex housing and contributed to its popularity. This involved considering the physical context within which plex housing developed, namely subdivisions, as well as the characteristics of traditional plex housing.

Given the diversity of housing archetypes (or models) in Montréal, the researchers chose one area as the source for studying each of the three plex models. They selected two maisonnettes, three duplexes and four triplex models, with a quadruplex and a quintuplex being part of the triplex group. For each of the nine houses, the research report includes photographs, sketches of the front and rear façades, floor plan and elevation drawings, and a brief description highlighting the plex's significance or popularity and some key features. Descriptions of the original layout for each house and use of space, plus renovations that have since been made, are also included in the report.

The researchers next analyzed various structural and façade (front and rear) components applicable to plexes in general, giving an historical overview of each component and noting subsequent changes in materials, practices and regulations. The structural components include fire-resistant walls, framing, roofs and electromechanical and communication systems. The façade elements include front and back yards, stairs, facing, crown, projections, openings and parking. The researchers also assessed which traditional or contemporary features and practices could be successfully incorporated into a new archetype for each form of plex housing.

Based on this work, the researchers developed a new prototype design—"renewed archetypes"—for each of the three models, incorporating traditional elements that have proven their worth and popularity, such as balconies, while incorporating new elements and design preferences, such as open layouts and an area for an office or other work space.

Findings

Benefits of Plex Housing

Traditional plex housing forms offer many benefits that continue to make them favourable choices for urban housing. For example, their housing density results in considerable space and energy savings compared to single-family suburban homes. With openings front and back, they provide effective ventilation and abundant natural light. As such, plex housing embodies principles of sustainable development.

While occupation density is high (up to 350 persons per hectare), the lifestyle generated by plex housing centres around the neighbourhood. By virtue of its design and some of its structural components, (porches, balconies and stairs), plex housing fosters social interaction and a sense of belonging. As such, it contributes to social integration rather than isolation. Not only can this form of housing accommodate various functions (residential, offices and commercial), it also adapts to various forms of ownership and has often housed landlords and tenants under the same roof.

Floor plans for this type of housing are flexible from a development viewpoint, making it easy to adapt his type of housing to the changing needs of a family or various dwellers over time. This characteristic has likely contributed the most to the longevity of plex as a desirable form of housing.

Renewed Plex Housing: Structural and Façade Components

Fire-resistant separations between attached units, in place of brick firewalls, are accepted practice by today's standards. Compared with firewalls, separations allow greater layout flexibility and result in lower construction costs. All three renewed archetypes include fire-resistant separations.

Modern framing allows for open layouts, as the floor structure and roof trusses transfer loads to the side walls. Platform framing allows better heat insulation of outside walls. The shallow stone foundation of older plex houses has been replaced with concrete foundations that create a basement or half-basement area that can be finished into a living space or a garage.

Flat roofs predominate Montréal's attached housing. This provides an ideal area for a roof deck, but it requires a resistant waterproof membrane. Conventional roofing on older plex housing is rather fragile and prone to cracking when a new structure is built on it. Elastomeric membranes used today are much more flexible and resistant than before. They are also more environmentally friendly as they do not require heating when being applied, as does asphalt, and emit fewer toxic fumes. Each of the proposed prototypes makes use of the roof area as an outdoor living space. In the case of the triplex, a mezzanine is added to provide access to the roof.

Skylights or multi-window roofs are other features that can be readily incorporated into plex designs. This allows considerably more natural light onto the top floor.

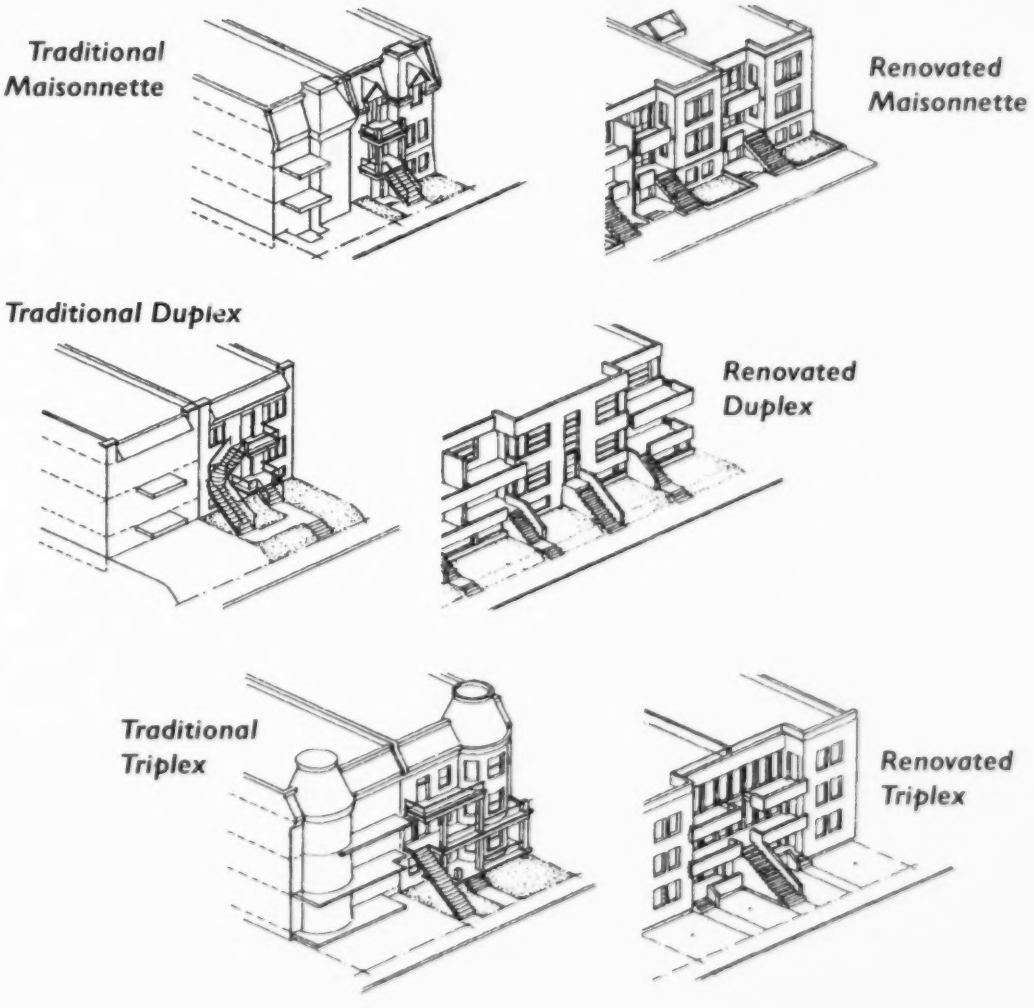
Forced-air heating systems are better suited for independent maisonnettes, whereas radiant heating would be better for duplexes and triplexes.

The front façade of plex housing includes the garden area in the front yard, the outdoor staircase, the balconies, siding materials and openings to the outside. Traditionally, there are three types of front yard treatments: a sunken courtyard, a raised terrace and on-grade access. The researchers consider all three still relevant for the renewed archetypes. Outdoor staircases are a distinctive feature of Montréal's plex housing. However, to make them safer and compliant with current standards, they must be built in a straight line rather than a curved one.

Each prototype has a layout for the back yard. Access to an outdoor deck has increasingly become a priority for many occupants. Depending on user preferences, part of the back yard can be used for a deck with the rest of the area used for trees, bushes, lawn or a garden.

When the rear area opens onto a lane, the yard or part of it tends to be paved over to accommodate a car. Alternatively, the front yard is made into a driveway. The researchers proposed options for each of the three prototypes.

Front façade



For maisonnettes, they propose that the back yard be closed off with a separate, two-car garage. In a duplex, a garage can be built in the basement and accessed from either a lane or the street. As an option, this space can be converted into an apartment or an office. The width of the triplex lots can accommodate three parking spaces in the back yard. For larger projects, parking spaces could be created underground or in a half-basement and coordinated between several houses.

Conclusion

The research demonstrates that renewal of plex housing as a viable model is not only possible, it is also highly desirable, due to its many social, economic, environmental and sustainable development benefits. The renewed archetypes integrate a variety of technical, functional and urban solutions that better meet today's lifestyles and interests.

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